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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/520,089	10/04/2005	Mahesh Jayachandra	13860.1USWO	2753

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EXAMINER	
RIDER, LANCE W	

ART UNIT	PAPER NUMBER
1618	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/520,089	JAYACHANDRA, MAHESH	
	Examiner	Art Unit	
	LANCE RIDER	1618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 November 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5 and 7-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5 and 7-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of the Application

The remarks and amendments filed on November 25th 2009 are acknowledged. Claim 1 was amended, claims 6 and 23-28 were canceled. Claims 1-5 and 7-22 are included in the prosecution.

Receipt and consideration of Applicants' amended claim set and remarks filed on January 6th 2010 is acknowledged. Rejections and objections not reiterated from previous office actions are hereby withdrawn. The following rejections or objections are either reiterated or newly applied. They constitute the complete set presently being applied to the instant application.

Applicant's arguments are moot in light of the new grounds of rejection.

New Grounds of Rejections

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim1-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the phrase "determining whether a subject has suffered an injury to an excitable tissue". How does one "determine" that damage to an excitable tissue has occurred? Is it simply a mental step performed by a practitioner? Is it performed by the same method for all cases of injury? There is no description or definition of how one "determines" that such an injury has occurred. This renders the claim indefinite. Claims 2-5, and 7-22 depend from this claim and do not rectify its indefinite nature.

Claim 17 recites the phrase "wherein the injury results in stroke". A stroke is an interruption of the blood supply to any part of the brain. There are potentially an innumerable number of injuries which could cause a stroke. This renders the claim indefinite as there is no way to interpret what injury has occurred. The examiner has interpreted this phrase to be "wherein the injury results from a stroke".

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-5, 7-20, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berde et al., U.S. Patent 6,046,187 in view of Stracher , et al., European Patent Application EP 0100673 as evidenced by Matsunari, I., et al., (Circulation, 2000) and Rosen, H., et al., (Stroke, 1998).

Berde teaches the use of a methylprednisone and procaine for the treatment of pain caused by nerve damage. (See claims 1, 8 and 16.) Berde teaches the use to treat peripheral nerves, somatic motor nerves, nerve plexuses, cranial nerves, and parasympathetic ganglia. Berde also teaches the treatment of circulatory dysfunctions using these compounds. (See column 21, paragraph 2, and column 18, paragraph 5.) Berde teaches that the compounds can be used locally or systemically. (See column 3, paragraph 2.) Berde teaches that the two agents can be administered together, before one another, or after one another. (See column 19, paragraph 5.) Berde also teaches

that the agents can be used before or after pain or nerve injury occurs as either an anesthetic for surgeries or to treat pain occurring from an illness. (See column 18, paragraph 5, and column 20, paragraph 5.) Berde teaches the use of these compounds to treat peripheral nerves, somatic motor nerves, nerve plexuses, cranial nerves, and parasympathetic ganglia. Berde also teaches the treatment of circulatory dysfunctions using these compounds. (See column 21, paragraph 2, and column 18, paragraph 5.)

Berde does not teach the administration of a protease inhibitor to an "excitable tissue" or nerve.

Stracher teaches the administration of leupeptin in a pharmaceutically acceptable vehicle for the treatment of nerve damage. (See page 3, paragraph 3.) Stracher teaches that leupeptin can be administered at the site of the injured tissue and systemically by oral administration. (See page 18, claim 9, and page 6, paragraph 1.) Stracher teaches that the most efficient treatment with leupeptin is to treat the injured site as rapidly as possible, anywhere from immediately out to the 8 hours instantly claimed. Stracher teaches that leupeptin can be used to treat many types of nerve injuries such as spinal trauma, compression nerve injuries, endopathic neuropahy, and neuropraxis. (See page 4, paragraph 2.)

It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Berde and Stracher for many reasons. First it is prima facie obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose. In the instant case Berde teaches the use of procaine

and methylprednisone for the treatment of nerve damage and pain, and Stracher teaches the use of leupeptin for the treatment of nerve damage. The idea of combining them flows logically from their having been individually taught in the prior art. In re Kerkhoven, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980) **MPEP 2144.06**. Second it would have been prima facie obvious to one of ordinary skill in the art to use a method to treat nerve pain as taught by Berde along with a treatment for nerve damage in order to form an improved treatment which both repaired damaged nerves but also gave patients relief form pain at the same time.

Regarding the administration of the drug together or apart, Berde teaches the use of procaine and methylprednisolone without the inclusion of leupeptin disclosed in Stracher, so it is obvious from the prior art that the administration of the compounds has been performed separately. As both compounds are used to treat the same dysfunction, it would also logically flow that they could be used in combination. The treatment with different drug dosages and their administration together or apart would depend upon the injury being treated, the length of the treatment, and the condition of the patient. The administration of leupeptin can be either parenteral during and after surgical procedures, or in an oral form for longer term treatment. Depending upon the condition of the patient, the administration of these compounds together or separately would obviously depend upon multiple criteria and would have been common decisions for one of ordinary skill in the art at the time of the invention.

A mixture of these compounds would have been obvious to one of ordinary skill in the art at the time of the inventions for the reasons stated above, and the mixtures

properties and administration would obviously be dependent upon the properties of each individual component in the mixture. In the instant case leupeptin is known to be more efficacious upon rapid delivery to the injured site, and it would have been obvious to one of ordinary skill in the art at the time of the invention, that the inclusion of this compound would necessitate administration methods which would include its administration in a rapid manner. The systemic or proximal administration of leupeptin was also known, which would effect the administration of the mixture of compounds as well. Depending upon the condition of the patient, the administration of these compounds would obviously depend upon multiple criteria and would have been common decisions for one of ordinary skill in the art at the time of the invention. The administration of the composition more than once as claimed in instant claim 22, "the reperfusion of the injured tissue" would also have been obvious to one of ordinary skill in the art at the time of the invention depending upon the needs of the patient, such as the need for further treatment after a previously ineffective administration of the drugs or the need for further relief from pain.

Regarding instant claims 14-20 drawn to treating injuries of the central nervous system, the brain, the spinal cord, and the heart that were caused by strokes or myocardial infarctions, the articles of Matsunari and Rosen provide evidence that myocardial infarctions cause strokes which cause nerve damage to the heart, brain, and other areas, due to ischemic injury. (See the abstract and paragraph 1 of Matsunari and page 476, paragraph 3 of Rosen.) As injury of these tissues causes injury to nerves it

would have been obvious to treat nerve injuries and the pain associated with such injuries using the methods of Berde and Stracher that were taught above.

Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Berde et al., U.S. Patent 6,046,187 in view of Stracher , et al., European Patent Application EP 0100673 as evidenced by Matsunari, I., et al., (Circulation, 2000) and Rosen, H., et al., (Stroke, 1998), as applied to claims 1-5, 7-20 and 22 above, and in further view of Young, W. et. al., (Current treatment for Human Spinal Cord Injury, web article included in IDS).

Berde et al., U.S. Patent 6,046,187 in view of Stracher , et al., European Patent Application EP 0100673 as evidenced by Matsunari, I., et al., (Circulation, 2000) and Rosen, H., et al., (Stroke, 1998) teach the treatment of nerve injury with procaine, methylprednisolone, and leupeptin. They do not disclose the decompression of tissues.

Young teaches the decompression of the spinal cord for the treatment of an injured spinal cord. (See page 1, paragraph 6.)

It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to combine the methods treating nerves for pain and damage as taught by Berde and Stracher with mechanical surgical treatments for bone in spinal cord injury as disclosed by Young in order to form an improved method of treating spinal cord injury. The combination of the use of agents for treatment of nervous tissues in the treatment of spinal injury and a mechanical surgical treatment for spinal cord injury would have been an obvious combination for one of ordinary skill in the art at the time of

the invention as it would have been obvious to repair both the physical bone damage as well as the tissue damage for such an injury.

Conclusion

No claims allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LANCE RIDER whose telephone number is (571)270-1337. The examiner can normally be reached on M-F 11-12 and 1-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael G. Hartley can be reached on (571)272-0616. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/LANCE RIDER/
Examiner, Art Unit 1618

/Eric E Silverman/
Primary Examiner, Art Unit 1618